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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/027,882      | 12/21/2001  | Vlad J. Novotny      | A0-001-2D           | 3229             |

27946 7590 07/21/2003

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EXAMINER

AHMED, SHAMIM

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1765

6

DATE MAILED: 07/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

10/027,882

Applicant(s)

NOVOTNY, VLAD J.

Examiner

Shamim Ahmed

Art Unit

1765

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                    | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2-5</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: The specification contains at least two blank spaces at page 1, paragraph (0001).

Appropriate correction is required.

### ***Claim Objections***

2. Claim 12 is objected to because of the following informalities: In the claim lines 1-3, the use of the phrase is incorrect such as "a third material layer is disposed between the first material layer and the third material layer". The correct phrase should be written, as "a third material layer is disposed between the first material layer and the second material layer".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 11-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Regarding claim 11, step c., the phrase "forming a second mask over the first material layer through the exposed portion of the second material layer" renders the claim indefinite because it raises a question that how the second mask is formed

Art Unit: 1765

through the exposed portion of the second material layer, wherein the first material layer is disposed over the second material layer?

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niedermann et al (5,994,160) in view of Farino et al (5,783,340).

Niedermann et al disclose a process of making micromechanical components (MEMS), wherein a semiconductor substrate is covered with masking layer of insulation layers and a photolithographic and etching operation is carried out to expose a surface, which is opposite side of the attached insulation layer 9b (col.6, lines 53-64 and col.7, lines 21-23 and figures 3A-3F).

Niedermann et al also disclose that the semiconductor substrate is etched to form opening down to an insulation layer (see figure 3F).

Niedermann et al remain silent about the adjusting the focus of the photolithographic image by an offset equal to the thickness of the semiconductor layer as the second material layer.

However, in a photolithographic process of making MEMS device, Farino et al disclose that a semiconductor layer is exposed through an insulation layer, wherein the focus is automatically adjusted based on the thickness of the material layer to be etched

Art Unit: 1765

for providing devices having sub-micron lateral dimensions (col.5, lines 56-64, col.6, lines 7-14).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Farino et al's teaching into Niedermann et al's process for providing devices with sub-micron lateral dimensions as taught by Farino et al.

Niedermann et al also disclose that the insulation layer as the first material layer is also masked with a second masking layer and etched.

As to claims 6-9,12-13, Niedermann et al do not disclose that etching the first material layer will expose a third material layer and the third material comprises silicon dioxide.

However, Farino et al also disclose that a material layer as the third layer can be provided on the top surface of the semiconductor substrate during the photolithographic process for defining one or more device features in the material layer (col.4, lines 8-14).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Farino et al's teaching into Niedermann et al's process for providing a third material layer for defining one or more device features in the material layer as taught by Farino et al.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reimann (4,987,781) and de Rooij et al 95,462,839) disclose conventional process for making MEMS devices using photolithographic technique, wherein the semiconductor substrate is masked on both the front and backside.

Art Unit: 1765

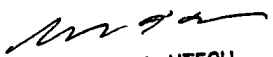
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Shamim Ahmed  
Examiner  
Art Unit 1765

SA  
July 10, 2003

  
BENJAMIN L. UTECH  
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